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**ARE MEDICAID CHILDREN RECEIVING
ADEQUATE LEVELS OF PREVENTIVE CARE?**

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INTRODUCTION

The Early Periodic Screening, Diagnosis and Treatment Program (EPSDT) is an ambitious preventive care program for Medicaid-enrolled children. Added to the Medicaid program under P.L. 90-248 in 1967, EPSDT provides screening and preventive care, as well as services necessary to correct health problems identified through screening. While the EPSDT program is generally believed to be effective in identifying, diagnosing and treating health problems, the great potential of the program to improve the health of Medicaid children has not been fully realized because of low reported participation in the program.

Concern over the low reported EPSDT participation rates, coupled with the deteriorating health status of the nation's poor children, led Congress to pass provisions in the Omnibus Budget Reconciliation Act of 1989 (OBRA-89) aimed at increasing participation in EPSDT. Among other things, OBRA-89 mandated that states set up distinct periodicity schedules for screening visits, imposed more stringent reporting requirements for the EPSDT program, and established federal authority to set state-specific performance standards for EPSDT. By fiscal year 1995, all states are to increase participation in EPSDT to 80 percent of Medicaid-enrolled children. To do so, states are expected to reduce the difference between their annual participation rate and the 80 percent goal by one-fifth each year, from fiscal year 1990 to fiscal year 1995.

In a review of the first reports submitted under the new guidelines, the Office of the Inspector General found that the EPSDT participant ratio (the proportion of enrollees who have at least one screening visit) and the screening ratio (the number of screening visits per enrollee) which are used to measure states' performance in the EPSDT program were not computed in a consistent manner across states. Furthermore, they did not provide an accurate measures of states' success in reaching and screening Medicaid-enrolled children.¹ Because of these difficulties, an accurate assessment of the impact of OBRA-89 and states' success in reaching and screening Medicaid children under EPSDT cannot be made from reported figures.

This paper reports on the results of our efforts to develop a consistent and accurate method of evaluating the progress that states have made in reaching and screening Medicaid children under the EPSDT program. The methods are applied to: (1) EPSDT and other preventive care visit data from the 1989 Medicaid Tape-to-Tape (TTT) claims files for three states -- California, Georgia and Michigan; and (2) well-child visit data from the 1987 National Medical Expenditure Survey (NMES) broken out for Medicaid children, privately insured children and uninsured children. The former data provides baseline information for evaluating the impact of the OBRA-89 provisions while the latter provide a national context within which to interpret the baseline results. In particular, we address the following questions:

- To what extent were Medicaid children being reached and screened for health care problems through the EPSDT program?
- To what extent were Medicaid children receiving preventive care services through Medicaid that were not counted and reported under the EPSDT program?
- Were states equally reaching and screening all Medicaid children for preventive care services or were states more or less successful with certain age groups of children?
- Did Medicaid children receive additional well-child care outside of Medicaid?
- How did Medicaid children's well-child care participation and compliance rates compare to those of privately insured and uninsured children in the United States?

The remainder of the paper is divided into five sections. First, we describe how we computed participation and compliance rates using claims- and event-level data. Then, in the next section, we describe the two data sets used to compute the rates. In the third section, we present the participation and

compliance rates for EPSDT screening visits computed with the TTT data. The rates are based on both state-specific periodicity schedules and a national standard periodicity schedule. In addition, we compute separate rates that include preventive care visits received under Medicaid but not counted under the EPSDT program. We break out all rates by age group and compare the rates to reported figures. In the following section, we present the well-child care participation and compliance rates computed from the 1987 NMES data for Medicaid children, privately insured children and uninsured children. We present conclusions in the fifth and final section.

METHODOLOGY

As mentioned above, the EPSDT participant and screening ratios reported by the states to the Health Care Financing Administration (HCFA) in 1989 were not computed in a consistent manner across states and are not believed to provide accurate measures of states' success in reaching and screening Medicaid children. In particular, the ratios neglected to take the periodicity schedule for screening visits relevant to the child's age and length of Medicaid enrollment into consideration and counted children in continuing care arrangements as having received all screens whether or not they actually received any screens. HCFA has since issued guidelines to the states on how to more accurately compute participant and screening ratios by accounting for the age-specific periodicity schedules and average enrollment duration.

Each state has a periodicity schedule that specifies the frequency and age intervals at which children should receive EPSDT screening services. For the most part, these schedules follow the periodicity schedules for well-child visits recommended by the American Academy of Pediatrics (AAP).² Children in compliance with the schedules will have a different number of visits during the year depending on their age at the end of the year. For instance, according to the AAP schedule, children aged 10 months at the end of the year should have had five well-child visits (or EPSDT screens) during the 10 months of their life;

children six years of age at the end of the year should have had one well-child visit during the year; and children turning 18 years of age at the end of the year should have had one well-child visit sometime during the preceding two years.

Because the states did not have to account for the age-specific recommended number of screening visits, the reported participant and screening ratios for 1989 are not accurate measures of the states' success in reaching and screening children. For example, older children who are not required to have a visit each year may have had their biannual visits either the year before or the year after the analysis year. Including these children in the denominator of a participation rate with a weight equal to that of an infant who should be having screens every two to three months will bias the state's participation and screening rates downwards. The state would appear less successful than it actually was in reaching and screening Medicaid children through EPSDT.

Furthermore, because periodicity schedules typically indicate recommended time intervals between visits, children enrolled in Medicaid for less than 12 months may be expected to have fewer than the full number of recommended visits for the year. More than one third of AFDC cash assistance Medicaid children and two thirds of other Medicaid children are enrolled in Medicaid for less than a full year.³ For example, if a full year of data was assumed for a child who was 16 months of age at the end of the year but who was enrolled for only the latter six months of 1989, then the expected number of visits would have been four rather than two. Again, this would make the states look less successful than they actually were in reaching and screening Medicaid children.

To assess the penetration of the EPSDT program among Medicaid-enrolled children and the level of screening services received under the program, we had to develop new measures of participation and service use for claims data that are consistent and accurate. To do so, we assigned two weights to each child in the database -- a participation weight and a compliance weight. The participation weight (\bar{P}) reflects

the child's expected probability of participating in EPSDT during the year while the compliance weight (\bar{S}) reflects the child's expected number of EPSDT screening visits during the analysis year. We adjusted the values assigned for both weights for the child's age and enrollment duration and the state's EPSDT screening periodicity schedule.

In deriving the weights, we first determined the recommended number of screening visits for a child enrolled for the full 12 months of 1989 based on the state's 1989 periodicity schedule and the age of the child at the end of the year. For younger children, the recommended number of screening visits was determined for each month of age. For children in age groups for which only one screening visit was recommended every other year, the child was assumed to be equally likely to have the screening visit anytime during the two years. Therefore, the recommended number of screening visits was one-half (0.5) visit; that is, the probability of an event occurring in either of two periods under a uniform distribution function over the two periods. Similarly, in California in 1989, where older children were expected to have EPSDT screening visits only once every four years, the recommended number of screening visits was the probability of a single event occurring in any of four periods under a uniform distribution function over the four periods, or 0.25.

We then adjusted for duration of enrollment by multiplying the number of recommended screening visits by the fraction of the year that the child was enrolled, or if the child was less than 12 months of age, the fraction of the child's life during which s/he was enrolled. This methodology assumes that a child was equally likely to receive a screening visit during a month in which s/he was enrolled as during a month in which s/he was not enrolled. Thus, the expected number of screening visits, \bar{S}_{ij} , for the i th child in the j th age group for age groups under 12 months is:

$$\bar{S}_{ij} = \frac{\text{Months Enrolled}_i}{\text{Months of Life}_i} \times \text{No. of Recommended Visits}_i$$

and for the i th child in the j th age group for age groups 12 months or greater is:

$$\bar{S}_{ij} = \frac{\text{Months Enrolled}_{ij}}{12} \times \text{No. of Recommended Visits}_{ij}$$

The child's compliance weight is simply the expected number of screening visits, \bar{S}_{ij} . The participation weight, the probability of the child participating in EPSDT, is equal to one if the expected number of screening visits for the child is greater than or equal to one. Otherwise, the child's participation weight is equal to \bar{S}_{ij} , that is:

$$\begin{aligned} \text{If } \bar{S}_{ij} \geq 1 & \text{ then } \bar{P}_{ij} = 1; \\ \text{else} & \quad \bar{P}_{ij} = \bar{S}_{ij}. \end{aligned}$$

We used these weights to compute participation and compliance rates for children in different age groups. Participation rates give the percentages of children with at least one screening visit among those recommended (expected) to have at least one screening visit. The numerator for the participation rate is the count of individuals with any EPSDT screening visits during the year (i.e., $P_{ij} = 1$ for children with at least one EPSDT screening visit and zero for children with no EPSDT screening visits). The denominator is the total expected number of participants, computed by summing the participation weights over the child population being tabulated.

$$\text{Participation Rate} = \frac{\text{Actual No. of Participants}}{\text{Expected No. of Participants}} = \frac{\sum_i P_{ij}}{\sum_i \bar{P}_{ij}}$$

Compliance rates give the percentages of total recommended (expected) screening visits children in different subgroups actually had. The numerator of the compliance rate is the total number of EPSDT screening visits children had during the year (i.e., S_{ij}). The denominator is the total expected number of screening visits, computed by summing children's compliance weights.

$$\text{Compliance Rate} = \frac{\text{Actual No. of Screens}}{\text{Expected No. of Screens}} = \frac{\sum S_I}{\sum \bar{S}_I}$$

THE DATA

We applied these procedures to two different sets of data -- the 1989 TTT Medicaid claims data for three states and the 1987 National Medical Expenditure Survey data. These data files are described in turn below.

1989 Tape-to-Tape Claims Data

The TTT database includes all enrollment and claims data for 1980 to 1991 from the Medicaid Management Information Systems (MMIS) in four states -- California, Georgia, Michigan and Tennessee -- as well as additional Medicaid data processed outside the regular MMIS. In two of the states (California and Michigan), EPSDT claims are separately processed. SysteMetrics routinely captures and incorporates these data into the uniform TTT claims files constructed from the MMIS data. Data from all but Tennessee are used in this paper.

We excluded three groups of Medicaid children from the TTT analyses presented in this paper: (1) children residing in institutions*; (2) children covered under Medicaid capitated health care plans; and (3) children with dual Medicare and Medicaid coverage. We excluded these children because they generally have incomplete claims and/or preventive care information.

* Institutionalized children include recipients of nursing home, ICF-MR or inpatient psychiatric services.

All Medicaid enrollees under the age of 21 years are eligible for EPSDT services. Therefore, with the few exclusions noted above, all Medicaid enrollees in the three study states who were under 21 years of age and enrolled for all or part of 1989 are included in the analyses. For children who turned 21 years of age during 1989, we analyzed data on participation and compliance only for the months during which they were 20 years of age.

As shown in Table 1, the total number of Medicaid enrollees comprising the analysis population for 1989 ranged from a low of 358,838 in Georgia, followed by Michigan with 598,296 and California with 2,065,719. The distributions of Medicaid children over the different age groups in 1989 are similar across the study states. Each state had a disproportionately large number of younger children in its Medicaid child population. In California and Georgia, approximately 46 percent of the Medicaid child population was under seven years of age; 43 percent of the Medicaid child population was under seven in Michigan.

Claims for EPSDT and other preventive care visits for these children were pulled for analysis. We identified preventive care visits based on specific procedure codes alone or procedure codes in combination with selected diagnosis codes. (See Appendix Table A-1 for a summary of these codes.) A visit was classified as an EPSDT screening visit if it had a category of service of EPSDT.

Under the EPSDT program, states are required to develop and disseminate periodicity schedules that outline at what ages and time intervals specific kinds of preventive or screening services are to be delivered to children. The federal regulations do not require that a common national standard be followed by all states. As a result, the different states had different schedules for EPSDT screening visits in 1989. (A comparison of the three state-specific EPSDT schedules and the AAP well-child visit schedule is given in Appendix Table A-2.) These differences make cross-state comparisons difficult. Therefore, we computed participation and compliance rates in California and Michigan based on both state-specific EPSDT schedules and the AAP well-child visit schedule; Georgia had adopted the AAP schedule for its EPSDT screening visits.

1987 National Medical Expenditure Survey

The 1987 NMES household survey database includes records with sources of payment for each ambulatory care visit received by a nationally representative sample of the civilian, noninstitutionalized population. The file also includes monthly insurance coverage information, including whether or not the person was enrolled in Medicaid. Therefore, we were able to duplicate the procedures developed for the claims data with these data and to examine Medicaid children's use of preventive care during periods of disenrollment, as well as to compare the experience of Medicaid children to that of other children in the United States -- in particular, children with private health insurance coverage and uninsured children.

The analysis sample included all children who were in the survey sample for the entire year or since birth. We classified children as Medicaid children if they were enrolled in the program during any month of the year, regardless of any other insurance coverage they may have had. Children who were not reported to have Medicaid coverage during any month of the year but who had at least one month of private insurance coverage we designated as privately insured. Finally, we classified children who were uninsured for the entire year as uninsured. Children who had only other public coverage or for whom insurance coverage is unknown are not shown separately in the analysis tables but are included in the data for all children.

The distribution of Medicaid children over the age categories varies for Medicaid children compared to the other groups of children (Table 2). In particular, we find a greater proportion of Medicaid children in the three youngest age groups compared to either privately insured or uninsured children. Approximately 46.5 percent of Medicaid children in the 1987 NMES file are under seven years of age -- the same approximate percentage as found in the TTT data. In contrast, only 34.4 percent of privately insured and 33.6 percent of uninsured children in NMES were under seven. These differences in the age distribution underline the need for age adjustments in computing preventive care participation and compliance rates for

comparisons across children in different health insurance categories.

We defined preventive care visits as all ambulatory visits for general check-ups, well-child care or immunizations, regardless of site of care (e.g., hospital outpatient department, neighborhood clinic and physicians' office). General check-ups for pregnancy-related conditions were deleted. We used the source of payment variable to distinguish Medicaid-covered visits from all others.

MEDICAID CLAIMS DATA ANALYSIS

We computed EPSDT participation and screening compliance rates for the three TTT states in 1989 based on both state-specific periodicity schedules and the AAP schedule for well-child visits. In addition, we computed separate rates that include preventive care visits children had under Medicaid but that were not attributed to the EPSDT program. Then, to determine whether the states are equally reaching all enrolled children or whether they are more or less successful with certain age groups of children, we broke out the results by age group.

Participation Rates

EPSDT Participation Rates Measured Against State Periodicity Schedules. As shown in Table 3, fewer than one fourth of Medicaid children in each TTT state had an EPSDT screening visit in 1989 – the percentage ranged from a low of 16 percent in Michigan to a high of 24 percent in Georgia. As described above, the percentage of children with EPSDT screens does not give an accurate account of the states' success in reaching and screening Medicaid children through EPSDT. Older children are not required to have a screening visit every year, and children of any age enrolled for only part of the year may not have been enrolled long enough to have a screening visit. Adjusting for the child's enrollment duration and the state periodicity schedule, we see a significant improvement in states' EPSDT participation rates (column

2). Nevertheless, only California reached more than 50 percent of Medicaid children recommended to have EPSDT screens in 1989. The adjusted participation rates are 54 percent for California, 40 percent for Georgia, and 35 percent for Michigan.

These rates vary from the rates reported to HCFA by the states, which are shown in the last column of Table 3. All of the adjusted EPSDT participation rates for 1989 were lower than the reported rates; the adjusted rate was 13 percentage points lower than the reported rate for Michigan, nine percentage points lower for California and four percentage points lower for Georgia. Part of the discrepancy is due to the different populations to which the rates apply. The state-reported rates apply to all Medicaid enrollees under 21 in the states, including children in capitated Medicaid health plans, institutionalized children and children with both Medicare and Medicaid coverage – all of whom are excluded from the population analyzed in this report. The discrepancies are also due to the different methods of computing the rates.

EPSDT Participation Rates Measured Against the AAP Periodicity Schedule. The application of the AAP standard substantially lowered the EPSDT participation rates in California and Michigan. Among the three study states in 1989, Michigan at 27 percent had the lowest participation rate based on AAP standards, and Georgia had the highest at 40 percent, followed closely by California at 39 percent. Thus, except for Michigan, which generally only counted preventive care delivered by public health departments as EPSDT in 1989 and, as a result, had a substantially lower EPSDT participation rate, the EPSDT program appears to have reached about 40 percent of children recommended to have well-child visits.

Overall Preventive Care Participation Rates. As mentioned above, children may have preventive care visits that were not counted and reported as EPSDT screening visits. The Children's Defense Fund calls these preventive care services the "shadow" EPSDT program. Among the study states, California and Michigan had substantial shadow programs. On the other hand, Georgia disallowed payment for well-child visits outside the official EPSDT program. To determine the true extent to which children were receiving

preventive care, we recomputed our adjusted participation rates to include both EPSDT screening visits and Medicaid-covered well-child visits outside the program using first the state-specific periodicity schedules and then the AAP schedule.

As shown in Table 3 (column 4), in Michigan and California, 64 percent of Medicaid children who were recommended to have EPSDT screens according to the state's periodicity schedule in 1989 had at least one EPSDT screening or well-child visit outside of the program. In California, 16 percent of these children received their preventive care entirely outside the EPSDT program (not shown). In Michigan, where generally only visits made at public health departments were reported as EPSDT visits, 45 percent of children with preventive care had their well-child visits entirely outside of EPSDT. On the other hand, Georgia, which disallows payment for well-child visits outside of EPSDT, had very few visits that we identified as well-child care provided outside of EPSDT. As a result, this state had the lowest percentage (41 percent) of children with any preventive care visits among the three states.**

Comparing the rates at which Medicaid children receive preventive care under the AAP schedule (column 5), we find that Michigan, which reached the fewest children under its EPSDT program, had the highest percentage of children recommended for a well-child visit actually with a visit. In Michigan, 51 percent of children in 1989 who should have had a well-child visit (according to the AAP schedule) had either one or more EPSDT screening visits or one or more well-child visits outside of the EPSDT program. California had 47 percent of children recommended for visits with at least one visit. Georgia reached 41 percent of children recommended to have visits.

** There may be some preventive care being provided in physicians' offices that are either not billed or are billed as diagnostic or treatment services. However, we found no evidence that Medicaid children in Georgia were receiving relatively more diagnostic and treatments visits than Medicaid children in the other two states.

Compliance Rates

EPSDT Compliance Rates Measured Against State Periodicity Schedules. We also computed compliance rates which measure the extent to which all recommended visits were completed. By comparing the compliance rates with the participation rates, we can determine whether the states are performing equally well in tracking children and getting them to return for repeat visits as they are in bringing the children into the system in the first place. However, only children under two and a half years old are required to have more than one visit a year. A compliance rate below the participation rate indicates that the state is performing less well in getting children to return for subsequent screening visits while a compliance rate above the participation rate indicates that children are having more than the recommended number of screens. (These latter children may be catching up on visits missed during months they were not enrolled in Medicaid.)

As shown in Table 4 (column 2), the average number of EPSDT screening visits that EPSDT participants had in 1989 ranged from a low of 1.0 visit in Michigan to a high of 1.4 visits in California. The average number of EPSDT screening visits per participant was 1.2 visits in Georgia. These visits accounted for 41 percent of recommended visits based on the state-specific periodicity schedule in California, 30 percent of recommended visits in Georgia, and 31 percent of recommended visits in Michigan. All of these compliance rates are lower than the EPSDT participation rates based on the state-specific schedules. The largest discrepancies in the compliance and participation rates are for California (13 percentage points) and Georgia (10 percentage points), and the smallest discrepancy is for Michigan (4 percentage points each). Thus, in the three TTT states, simply getting the children into the EPSDT system did not guarantee that they would have all recommended screening visits while enrolled.

EPSDT Compliance Rates Measured Against the AAP Periodicity Schedule. The rates based on the AAP well-child visit periodicity schedule in California and Michigan were both lower than the rates

based on the state-specific schedules (column 3). The standardized rates show that Medicaid children had 18 percent of AAP-recommended visits through the EPSDT program in Michigan and 34 percent of AAP-recommended visits through the EPSDT program in California. Georgia, which based its EPSDT schedule on the AAP well-child visit schedule, provided 30 percent of recommended visits through the EPSDT program.

The compliance rates based on the AAP schedule were all below the AAP-based participation rates. However, for California, the discrepancy between the rates was much smaller than the discrepancy between the rates based on the state periodicity schedule. On the other hand, because Michigan required fewer screening visits than the AAP for younger children, the discrepancy increased in Michigan.

Overall Preventive Care Compliance Rates. The average number of preventive care visits, including both EPSDT screening visits and visits not counted as EPSDT, and compliance rates based on these visits and both the state-specific EPSDT periodicity schedules and the AAP well-child visit schedule are also shown in Table 4. These measures are higher than those based on EPSDT screening visits alone in each of the states with shadow programs.

The average number of preventive care visits per user was 1.5 visits in California. These visits accounted for 53 percent of the recommended visits based on the state-specific EPSDT periodicity schedule and 44 percent of the recommended visits based on the AAP well-child visit schedule. The largest difference in the measures based on EPSDT screening visits and all preventive care visits is seen in Michigan, where official EPSDT providers were largely public health departments in 1989. When well-child visits Michigan children had outside the program are added to EPSDT screening visits, children with visits averaged 1.5 visits compared to 1.0 EPSDT visit alone. These visits accounted for 82 percent of screening visits recommended under the state's EPSDT periodicity schedule but a lower 46 percent of AAP-recommended well-child visits for the targeted child population. This compares to Georgia with virtually no well-child visits

provided through Medicaid outside of EPSDT, which averaged 1.2 visits per user. Georgia's EPSDT program provided 30 percent of recommended visits -- the lowest compliance with AAP standards among the study states.

Compliance rates computed with all preventive care visits are lower than the respective participation rates, with one exception. In Michigan, the compliance rate based on the state's periodicity schedule (82 percent) is higher than the comparable participation rate (64 percent), suggesting that some children had more than the number of well-child visits recommended by the state's EPSDT program. Michigan recommends many fewer visits for children under seven years of age than other states and the AAP. The AAP schedule recommends that children have nine well-child visits by their second birthday, an annual visit through age six and one visit every other year after that through age 20; Michigan requires only three EPSDT screening visits by the child's second birthday and one visit every other year from ages two through 20. Because the average number of EPSDT visits is close to one, suggesting that each participant had a single EPSDT visit during 1989, the excess number of visits must be coming from outside the program. These providers may be scheduling well-child visits based on the AAP schedule rather than the state's EPSDT schedule. As stated above, when the compliance rate is recomputed based on all preventive care visits and the AAP periodicity schedule, we find that children had 46 percent of recommended visits in Michigan. This compliance rate, which is the highest among the study states, compares to a participation rate of 51 percent.

Variations in Participation and Compliance by Age Group

Participation Rates Measured Against the AAP Periodicity Schedule. In California, the shadow program increased the participation rates proportionately more among children in the older age groups than children in the younger age groups. The percentage of Medicaid children in California with any preventive care visits increased by 46 percent among adolescents but only by 13 percent among infants (not shown).

The reverse was true in Michigan. When shadow program visits were added to EPSDT screening visits in Michigan, the percentage of infants with any preventive care in 1989 more than tripled while the percentage of adolescents rose by 60 percent.

As shown in Figure 1, when all preventive care visits are counted, Medicaid children in the two youngest age groups had the highest adjusted participation rates in California and Michigan during 1989. Michigan infants (children under 12 months of age) had the highest participation rate (64 percent) among the different age groups and states investigated. The same patterns across age groups is not evident in Georgia. In Georgia, the adjusted participation rate based on all preventive care visits and the AAP periodicity schedule ranged from 38 percent for infants and children aged three to six years to 46 percent for children aged seven to 12 years.

Compliance Rates Measured Against the AAP Periodicity Schedule. According to the AAP periodicity schedule, only children under two and a half years of age at the end of the year are expected to have more than one EPSDT screening visit or well-child visit in the previous 12 months. Compliance rates for children two and under were consistently below participation rates, suggesting that many young children were not having the full series of recommended screening visits. At the same time, compliance rates were equal to or greater than the corresponding participation rates for children over three years of age, suggesting that a few of these children had more than a single preventive care visit during the year.

As shown in Figure 2, when all preventive care visits are considered, children aged three to six years had the highest compliance rates in California and Michigan while children aged seven to 12 years had the highest rate in Georgia. Michigan children in all age groups, except the one and two year old group, had higher percentages of AAP-recommended well-child visits compared to children in the other states. California had the highest compliance rate based on the AAP-recommended schedule (47 percent) for one and two year olds.

Summary

This analysis of EPSDT participation and compliance with state-specific and AAP periodicity schedules among the three TTT states reveals the following findings.

- Among the three study states in 1989, only California reached more than 50 percent of children recommended in the state to have an EPSDT screening visit. However, when a uniform standard periodicity schedule based on AAP recommendations is used, no state reached more than 40 percent of children who should have had visits.
- All three study states were more successful in getting children into the system at least once during the year than they were in getting children to have a complete series of recommended screens in 1989. Medicaid children had only 30 to 41 percent of state-recommended visits and 18 to 34 percent of AAP-recommended visits in the three study states.
- Only Georgia was effective in providing all well-child care through the EPSDT program. However, as a result, children in Georgia may not be receiving as much preventive care as children in other states. In the other two study states, the percentage of children with any preventive care visits and in compliance with state-specific or AAP periodicity schedules improved when both EPSDT screening visits and well-child visits outside the program were considered.
- The shadow program was a particularly important source of preventive care for children in Michigan, where in 1989 EPSDT providers were largely public health departments. While Michigan had the lowest EPSDT compliance with AAP standards, when all preventive care visits are taken into account, the state had the highest compliance rate among the three study states.

- In two of the study states, California and Michigan, children under three years of age had higher adjusted overall preventive care participation rates based on the AAP periodicity schedule compared to older children. However, in Georgia, seven to 12 year olds had the highest participation rate.
- In all three study states, not all participating children under two and a half years of age who are recommended to have more than one preventive care visit completed their full series of visits. On the other hand, a few older children who should have had a single well-child visit had more than one visit.

ANALYSIS OF THE 1987 NATIONAL MEDICAL EXPENDITURE SURVEY DATA

We computed preventive care participation and compliance rates with data from the 1987 NMES, similar to those computed with the Medicaid claims data for the three TTT states. For Medicaid children in the NMES file, we computed two sets of rates. The first set counted only well-child care visits paid for through the Medicaid program and adjusted for the child's Medicaid enrollment period. The second set counted all well-child visits received by Medicaid children during the entire year, regardless of payment source. We also computed rates from the NMES data for children with some private insurance coverage during the year and children who were uninsured during the entire year. We based all rates on the AAP-recommended schedule of well-child visits. These data allow us to investigate: (1) whether children enrolled in Medicaid any time during the year utilized well-child care outside of the Medicaid program; and (2) whether Medicaid children utilized well-child care more or less frequently than other children in the United States.

Medicaid Children's Overall Preventive Care Participation and Compliance Rates

As shown in Table 5, the Medicaid program reached 43 percent of children recommended by the

AAP to have a well-child visit during their period of Medicaid enrollment in 1987 and provided 46 percent of the recommended visits. The 43 percent participation rate falls within the 41-51 percent range of participation rates for all well-child visits computed from the TTT data (Table 3), and the 46 percent compliance rate is on the upper end of the compliance rate range of 30-46 percent found with the TTT data (Table 4).

In contrast to the rates computed from the TTT data, the overall compliance rate computed from the NMES data is slightly higher than the overall participation rate. The higher relative compliance rates may be due to different sources of information on the reason for physician visits in the two databases. The NMES respondents and their mothers providing the reason for visits may be more likely to report the initial reason for a visit whereas physicians performing a well-child visit may record a diagnosis code for treatment of a condition found during a well-child check-up, thereby reclassifying the visit as a diagnostic and/or treatment visit in the claims data.

The NMES data also show that while children enrolled in Medicaid received most of their well-child care through the program, they also received a substantial amount of preventive care outside of the program. Of the 1.8 well-child visits per user among the Medicaid child population, 0.4 visit per user (about 22 percent of the visits) was received outside the program during 1987. When all well-child visits received by Medicaid children during the year are considered, we found a participation rate of 47 percent and a compliance rate of 51 percent.

Comparison of Preventive Care: Medicaid, Privately Insured and Uninsured Children

These latter rates for Medicaid children can be compared to the rates for children with some private insurance coverage during the year and the rates for uninsured children. The comparison shows that Medicaid children were only slightly less likely than children with private insurance coverage to have any

well-child visits during 1987 (47 percent versus 51 percent) and to have the AAP-recommended number of visits (51 percent versus 58 percent). Part of these discrepancies are due to the state EPSDT periodicity schedules used for outreach activities and scheduling screening visits for Medicaid children which in many states require fewer visits over the lifetime of a child compared to the AAP periodicity schedule for well-child visits.

On the other hand, Medicaid children were much more likely to have any well-child visits and to have the AAP-recommended number of visits than were uninsured children in 1987. Children with no health insurance coverage during the year had a participation rate of 31 percent and a compliance rate of 34 percent.

Compliance rates were slightly higher than participation rates for children in each insurance coverage group. Medicaid children had slightly more visits per child but this is due to a greater number of younger children among the Medicaid group (Table 2).

Variations in Participation and Compliance by Age Group

As shown in Figure 3, the pattern of declining participation by age group is more prevalent in the participation rates broken out by age group for children in the 1987 NMES survey than it was in the data for children in the three TTT states in 1989 (Figure 1). Among the NMES children, infants had the highest participation rates followed by one to two year olds after which the rates leveled off. Similar to the findings from the 1989 TTT data (Figure 2), school-aged children had the highest compliance rates (Figure 4).

Furthermore, the patterns among children with different insurance coverage found in the overall rates are evident in each age group, with two notable exceptions. Compliance rates for Medicaid children aged one to two years were lower than the rate for uninsured toddlers and compliance rates for Medicaid children

aged seven to 12 years were higher than the rate for seven to 12 year olds who were covered by private health insurance at some time during the year. The latter result may be due to children covered by Medicaid catching up on well-child visits for immunizations that were missed when they were younger.

Similar to the findings for Medicaid children in the three TTT states, compliance rates computed from the NMES data for children under three years of age, regardless of insurance coverage, were lower than participation rates while for older children compliance rates consistently exceeded participation rates. Thus, not all infants and toddlers were receiving their full series of AAP-recommended well-child visits while some older children with well-child visits had more than the single recommended visit during 1987.

Summary

The analysis of preventive care use among children in the 1987 NMES reveals the following findings:

- While children enrolled in Medicaid during 1987 received most of their well-child care through the Medicaid program, they also received a substantial amount of preventive care (approximately 22 percent) outside of the program.
- Medicaid children are only slightly less likely than children with private insurance coverage to have any well-child visits during the year and to have the AAP-recommended number of visits. However, Medicaid children are much more likely to have any well-child visits and to have the AAP-recommended schedule than are uninsured children.
- Among the children in the 1987 NMES, infants had the highest participation rates followed by one to two year olds. However, school-aged children had the highest compliance rates.

CONCLUSIONS

We developed measures to determine states' success in reaching and screening Medicaid children through the EPSDT program and applied the measures to TTT claims data for three states in 1989 and to a national sample of children from the 1987 NMES database. We found that if we count only those preventive care visits states designated as EPSDT screening visits, California and Georgia in 1989 were only halfway and Michigan was only a third of the way to reaching the 80 percent EPSDT participation goal set for 1995 by the Secretary of the Department of Health and Human Services. However, when we count all preventive care visits paid by Medicaid, whether or not they are considered part of the EPSDT program, compliance with national standards for well-child visits is substantially improved in California and Michigan. Nevertheless, all three states are still far from the target rate. Furthermore, because of the recent expansions in children's Medicaid eligibility, a deterioration in the rates may be experienced before improvements are realized while states gear up to implement new outreach activities and expand service capacity.

In addition, preventive care participation and compliance rates for Medicaid children are not that different than those of children with private insurance coverage, suggesting that the problem is not confined to the low-income population. The 80-percent target should be evaluated against both the medical needs of the population and the available service capacity. If the target remains both desirable and feasible, then policies should be implemented that will help states achieve the goal not only for low-income children but for children from higher income households as well.

REFERENCES

1. U.S. Department of Health and Human Services, Office of the Inspector General. *Early and Periodic Screening, Diagnosis and Treatment Program program review*. Baltimore, MD: Medicaid Bureau, 1992.
2. Orloff TM, Rivera LA, Rosenbaum, S. *Medicaid reforms for children: An EPSDT chartbook*. Washington, D.C.: Children's Defense Fund, September 1992. Table 9.
3. 1991 Tape-to-Tape Early Returns Tables. Washington, DC: SysteMetrics, 1993.

TABLE 1
NUMBER AND PERCENT DISTRIBUTION OF MEDICAID CHILDREN BY AGE GROUP, 1989

	<12 Months	1-2 Years	3-6 Years	7-12 Years	13-20 Years	All Children
California						
Number of children	194,926	296,867	458,677	523,756	591,493	2,065,719
Percent	9.4%	14.4%	22.2%	25.4%	28.6%	100.0%
Georgia						
Number of children	31,089	54,885	80,992	94,429	97,443	358,838
Percent	8.7%	15.3%	22.6%	26.3%	27.2%	100.0%
Michigan						
Number of children	53,615	78,931	126,055	150,981	188,714	598,296
Percent	9.0%	13.2%	21.1%	25.2%	31.5%	100.0%

SOURCE: 1989 Medicaid Tape-to-Tape data files.

TABLE 2

NUMBER AND PERCENT DISTRIBUTION OF NONINSTITUTIONALIZED CHILDREN IN THE UNITED STATES
BY HEALTH INSURANCE STATUS AND AGE GROUP, 1987

	<12 Months	1-2 Years	3-6 Years	7-12 Years	13-20 Years	All Children
Medicaid children						
Sample size	135	193	402	451	438	1,619
Weighted number of children	827,155	1,014,917	2,261,432	2,362,411	2,357,669	8,823,585
Percent	9.4%	11.5%	25.6%	26.8%	26.7%	100.0%
Children with some private coverage at least part of the year						
Sample size	308	533	1,098	1,608	2,085	5,632
Weighted number of children	2,418,714	3,791,992	7,930,791	11,600,825	15,400,554	41,142,876
Percent	5.9%	9.2%	19.3%	28.2%	37.4%	100.0%
Children uninsured all year						
Sample size	59	107	185	292	451	1,094
Weighted number of children	425,660	661,054	1,217,073	1,791,071	2,774,995	6,869,853
Percent	6.2%	9.7%	17.7%	26.1%	40.4%	100.0%
All children						
Sample size	527	858	1,712	2,408	3,036	8,541
Weighted number of children	3,865,113	5,639,262	11,561,931	16,116,704	20,912,902	58,095,912
Percent	6.7%	9.7%	19.9%	27.7%	36.0%	100.0%

SOURCE: 1987 National Medical Expenditure Survey.

TABLE 3
EPSDT AND OVERALL PREVENTIVE CARE PARTICIPATION RATES, 1989

	Study Population					State Reported, All Medicaid Children ²	
	Unadjusted EPSDT Only	Adjusted ¹ EPSDT Only		Adjusted ¹ All Well-Child			
		State Schedule	AAP Schedule	State Schedule	AAP Schedule		
California	22%	54%	39%	64%	47%	63%	
Georgia	24	40	40	41	41	44	
Michigan	16	35	27	64	51	48	
National	---	---	---	---	---	39	

SOURCE: 1989 Medicaid Tape-To-Tape data files.

¹Adjusted for enrollment duration and age-specific periodicity schedules.

²From Health Care Financing Administration, Summary of HCFA-416 Reports-Fiscal Year 1989, Baltimore, MD: U.S. Department of Health and Human Services, 1990. These figures include children in capitated Medicaid health plans, institutionalized children, and children who have both Medicare and Medicaid coverage, all of whom were excluded from the TTT study population.

TABLE 4
EPSDT AND OVERALL PREVENTIVE CARE COMPLIANCE RATES, 1989

	EPSDT Screening Visits Only			EPSDT Plus Other Well-Child Visits		
	Number of Visits Per User	Compliance Rates ¹		Number of Visits Per User	Compliance Rates ¹	
		State Schedule	AAP Schedule		State Schedule	AAP Schedule
California	1.4	41%	34%	1.5	53%	44%
Georgia	1.2	30	30	1.2	30	30
Michigan	1.0	31	18	1.5	82	46

SOURCE: 1989 Medicaid Tape-To-Tape data files.

¹Adjusted for enrollment duration and age-specific periodicity schedules.

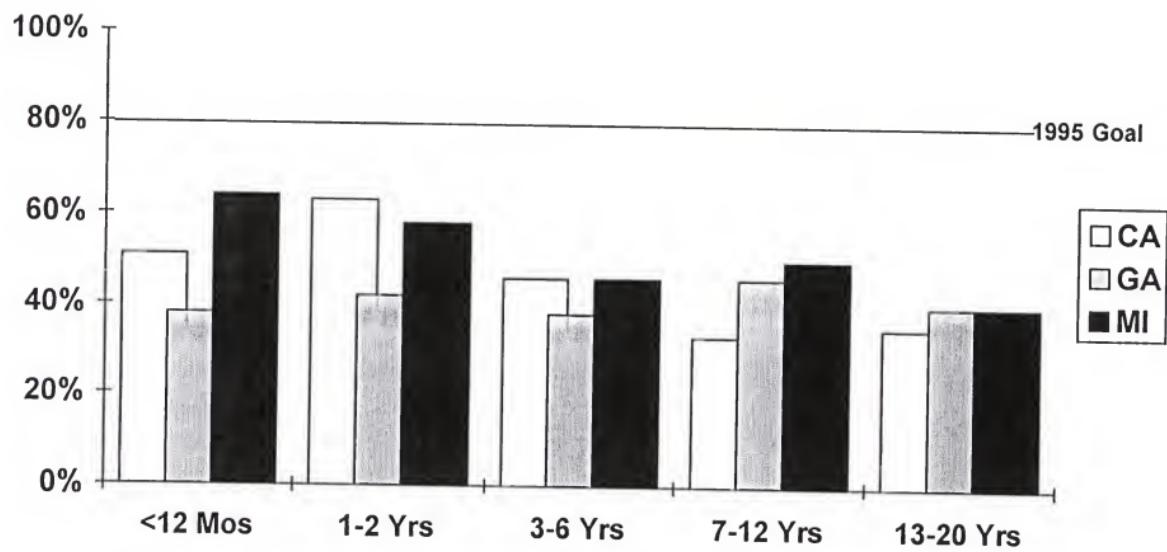
TABLE 5
OVERALL PREVENTIVE CARE PARTICIPATION AND COMPLIANCE RATES, 1987

Insurance Category	Participation Rates		Number of Visits Per User	Compliance Rate ¹
	Unadjusted	Adjusted ¹		
Medicaid children (enrolled at least part of the year)				
Medicaid covered visits during period of enrollment	27%	43%	1.4	46%
All well-child visits	34	47	1.8	51
Children with some private coverage at least part of the year	34	51	1.8	58
Children uninsured all year	21	31	1.7	34
All children	33	48	1.8	54

SOURCE: 1987 National Medical Expenditure Survey

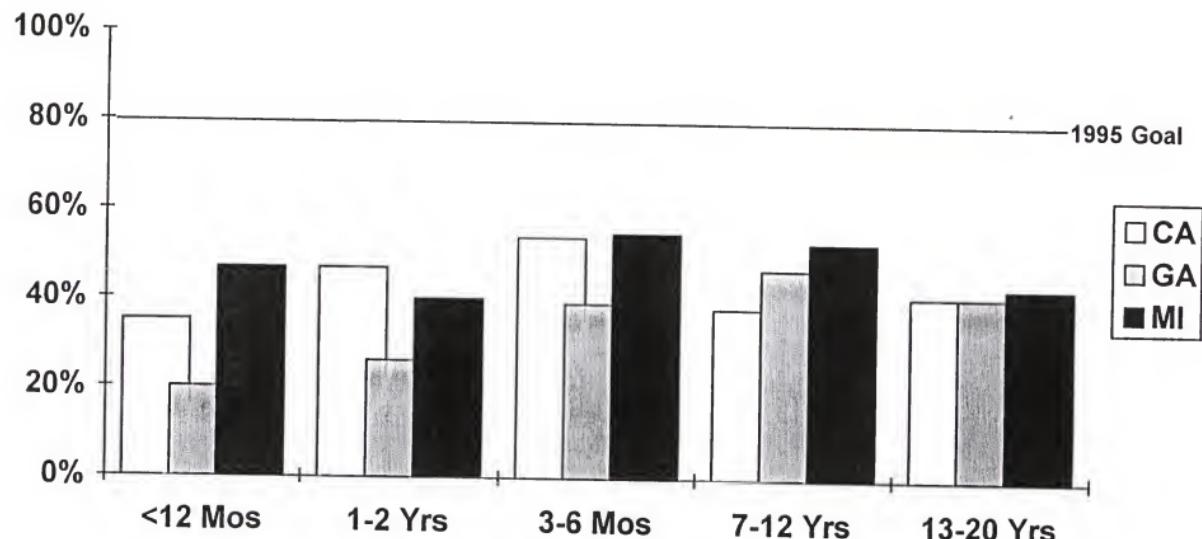
¹Adjusted for the age-specific AAP periodicity schedule.

FIGURE 1. ADJUSTED¹ PREVENTIVE CARE PARTICIPATION RATES FOR MEDICAID CHILDREN BY AGE GROUP, 1989



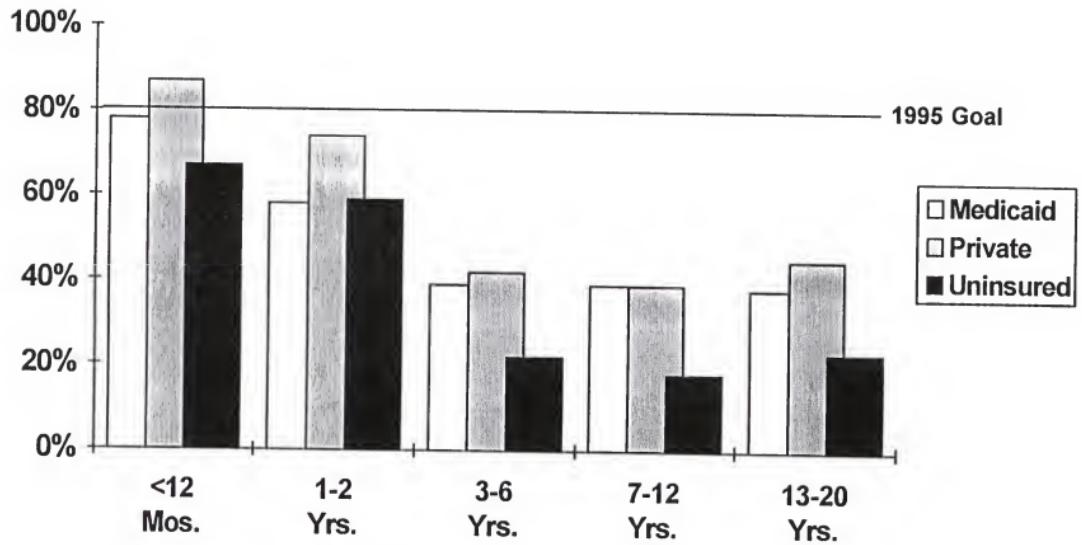
¹Adjusted for enrollment duration and the age-specific AAP periodicity schedule.

**FIGURE 2. ADJUSTED¹ PREVENTIVE CARE
COMPLIANCE RATES FOR MEDICAID CHILDREN
BY AGE GROUP, 1989**



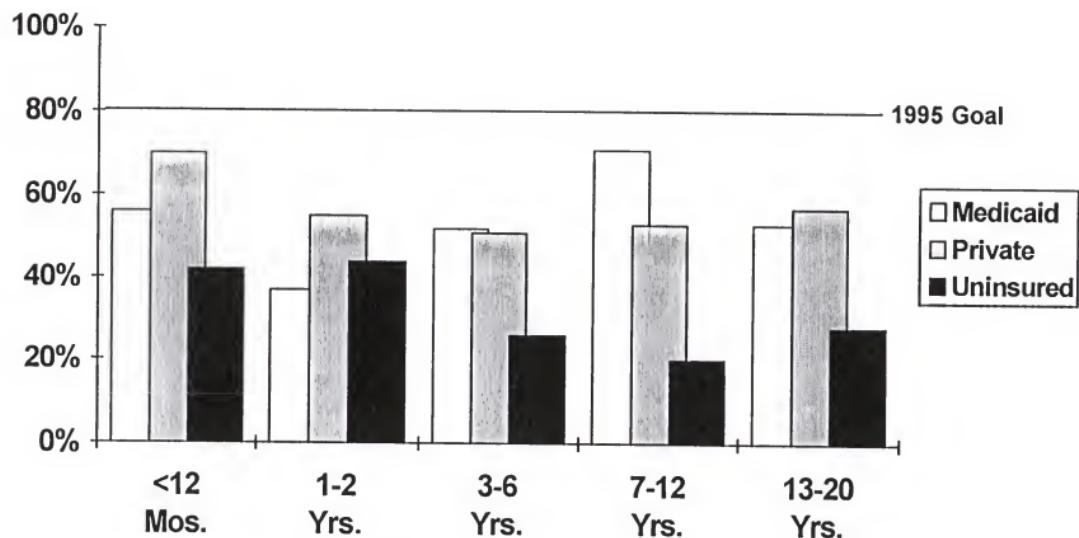
¹Adjusted for enrollment duration and the age-specific AAP periodicity schedule.

FIGURE 3. ADJUSTED¹ PREVENTIVE CARE PARTICIPATION RATES FOR CHILDREN BY AGE GROUP AND INSURANCE CATEGORY, NMES 1987



¹Adjusted for the age-specific AAP periodicity schedule.

**FIGURE 4. ADJUSTED¹ PREVENTIVE CARE
COMPLIANCE RATES FOR CHILDREN BY AGE
GROUP AND INSURANCE CATEGORY, NMES 1987**



¹Adjusted for the age-specific AAP periodicity schedule.

APPENDIX

TABLE A-1
1989 PROCEDURE CODES FOR PREVENTIVE CARE VISITS
CPT4, NATIONAL HCPCS AND UB82

Stand Alone CPT-4 Procedure Codes		
90750	90754	90761
90751	90755	90762
90752	90757	90763
90753	90760	90764
CPT-4 Procedure Codes for General Office Visits¹		
90000	90020	90060
90010	90030	90070
90015	90040	90080
90017	90050	
National HCPCS Codes for Office Visits¹		
M0005	M0007	M0009
M0006	M0008	
UB82 Revenue Codes for General Visits¹		
510	521	982
519	523	983
520	529	

To be flagged as a preventive care visit, the claim record must have one of these procedure codes in combination with one of the following ICD-9-CM diagnosis codes: V03-V03.9, V04-V04.8, V05-V05.9, V06-V06.9, V18-V18.8, V19-V19.8, V20-V20.2, V21-V21.9, V70.0, V70.3, V70.5-V70.9, V72.0-V72.1, V72.3, V72.6, V72.8-V72.9, V73-V73.9, V74-V74.9, V75-V75.9, V76-V76.9, V77-V77.9, V78-V78.9, V79-V79.9, V80-V80.3, V81-V81.6, V82-V82.9.

TABLE A-2

AMERICAN ACADEMY OF PEDIATRICS WELL-CHILD VISIT SCHEDULE AND
STATE-SPECIFIC EPSDT SCREENING VISIT SCHEDULES

	AAP and Georgia	California	Michigan
Birth to 12 months	6 visits	6 visits	2-3 visits
1-2 years	3 visits	3 visits	1 visits
3-5 years	3 visits	2 visits	1 visits
6-8 years	2 visits	1 visits	1 visits
9-20 years	6 visits	3 visits	6 visits
Total	20 visits	15 visits	11-12 visits

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